

## **REMARKS**

This is responsive to the Office Action mailed May 12, 2008 ("Office Action").

### **Claim Rejections – 35 U.S.C. §103**

Claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hampden-Smith et al. (US 2005/0112056) in view of Edlund et al. (US 2002/0114984).

Claim 1 discloses a fuel supply apparatus for providing a continuous supply of a hydrogen-rich reformat comprising the following: (1) a reforming reactor comprising a catalyst bed for converting a hydrocarbon fuel to a reformat, the catalyst bed comprising a reforming catalyst and a carbon dioxide fixing material; (2) a hydrogen storage device in fluid communication with the reforming reactor for storing a portion of the reformat; (3) a reformat outlet in fluid communication with the hydrogen storage device; and (4) a controller in communication with the reforming reactor and the hydrogen storage device for controlling the delivery of reformat to the reformat outlet.

According to the Examiner, Hampden-Smith discloses a fuel supply apparatus for providing a hydrogen-rich reformat comprising a reforming reactor (paragraph 0251) and a hydrogen storage device (paragraph 0252). In addition to the arguments previously presented and hereby incorporated by reference, Applicants respectfully disagree. As can be seen from the below excerpts from Hampden-Smith, Hampden-Smith (1) does not disclose a fuel supply apparatus comprising a reforming reactor and a hydrogen storage device and (2) does not disclose a hydrogen storage device in fluid communication with the reforming reactor for storing a portion of the reformat. Hampden-Smith merely discusses the compatibility of materials.

The benefits of SSR, particularly the purity of the hydrogen stream, combined with the potential benefits of using existing metal hydride storage materials, leads to a strong impact on the capital cost and operating efficiency of the fuel cell stack, especially in stationary

fuel cell applications including in back-up power units for uninterruptible/emergency power supply applications, as well as residential and commercial applications. (Paragraph 0251.)

In contrast, the gas feed from the SSR system, which due to its high H<sub>2</sub> content and low impurity content, can uniquely be coupled directly with the existing metal hydride hydrogen storage materials has an enormous impact on the cost and operation of the stack. (Paragraph 0252.)

According to the Examiner, Edlund teaches a controller (120) in communication with the reforming reactor and the hydrogen storage device for controlling the delivery of reformat to the reformat outlet. In addition to the arguments previously presented and hereby incorporated by reference, Applicants respectfully disagree. According to Edlund, "The fuel cell system of the present invention may, but does not necessarily, include a controller employed to control the operation of hydrogen storage system 58." [Paragraph 0047.] Further, "Controller 120 is adapted to monitor selected operating parameters such as pressures, temperatures, and flow rates of components of the hydrogen storage system and/or the fuel cell system and direct the relative flow of hydrogen gas from hydrogen storage system 58 at least partially in response to monitored values." [Paragraph 0048.] In addition, "Controller 120 may additionally control the flow of hydrogen gas to hydrogen storage system 58." [Paragraph 0048] As can be seen from the above excerpts from Edlund, Edlund does not disclose a controller in communication with the reforming reactor.

Therefore, Hampden-Smith and Edlund alone or in combination do not teach or suggest a fuel supply apparatus as is disclosed in claim 1 of the present invention. As a result, claim 1 is not unpatentable over Hampden-Smith in view of Edlund. Reconsideration and withdrawal of the rejection of claim 1 under §103(a) is respectfully requested.

Claims 1-3, 5-7, and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar et al. (US 6,103,143) in view of Edlund et al. (US 2002/0114984).

Claim 1 and the claims which depend from claim 1 disclose a fuel supply apparatus for providing a continuous supply of a hydrogen-rich reformat comprising the following: (1) a reforming reactor comprising a catalyst bed for converting a hydrocarbon fuel to a reformat, the catalyst bed comprising a reforming catalyst and a carbon dioxide fixing material; (2) a hydrogen storage device in fluid communication with the reforming reactor for storing a portion of the reformat; (3) a reformat outlet in fluid communication with the hydrogen storage device; and (4) a controller in communication with the reforming reactor and the hydrogen storage device for controlling the delivery of reformat to the reformat outlet.

According to the Examiner, Sircar discloses a fuel supply apparatus for providing a hydrogen-rich reformat. However, according to the Examiner, Sircar does not disclose a controller. According to the Examiner, Edlund does disclose a controller 120 in communication with the reforming reactor and the hydrogen storage device for controlling the delivery of reformat to the reformat outlet. In addition to the arguments previously presented and hereby incorporated by reference, Applicants respectfully disagree. According to Edlund, "The fuel cell system of the present invention may, but does not necessarily, include a controller employed to control the operation of hydrogen storage system 58." [Paragraph 0047.] Further, "Controller 120 is adapted to monitor selected operating parameters such as pressures, temperatures, and flow rates of components of the hydrogen storage system and/or the fuel cell system and direct the relative flow of hydrogen gas from hydrogen storage system 58 at least partially in response to monitored values." [Paragraph 0048.] In addition, "Controller 120 may additionally control the flow of hydrogen gas to hydrogen storage system 58." [Paragraph 0048] As can be seen from the above excerpts from Edlund, Edlund does not disclose a controller in communication with the reforming reactor.

Therefore, Sircar and Edlund alone or in combination do not teach or suggest a fuel supply apparatus as is disclosed in claim 1, and the claims which depend from

claim 1, of the present invention. As a result, claim 1, and the claims which depend from claim 1, are not unpatentable over Sircar in view of Edlund. Reconsideration and withdrawal of the rejection of claims 1-3, 5-7, and 11-17 under §103(a) is respectfully requested.


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#### Conclusion

All of the stated grounds of objection and rejection are believed to have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



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